

# Behavior Change Strategies for Diabetes Self-Management

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# Agenda

- ❑ The challenges of behavior change and regimen adherence in diabetes self-management
  - ❑ Including literacy, health literacy, and functional impairment
- ❑ Defining the core diabetes self-management behaviors (AADE 7 framework)
- ❑ Problem solving as a key strategy for unlocking all other self-management behaviors
  - ❑ The “How-To’s” of using problem-solving training for diabetes self-management education
- ❑ Does it Work? The DECIDE Program model for behavior change in diabetes

# The Challenges of Behavior Change and Regimen Adherence for Diabetes Self-Management



# Burden of Ongoing Disease Self-Care

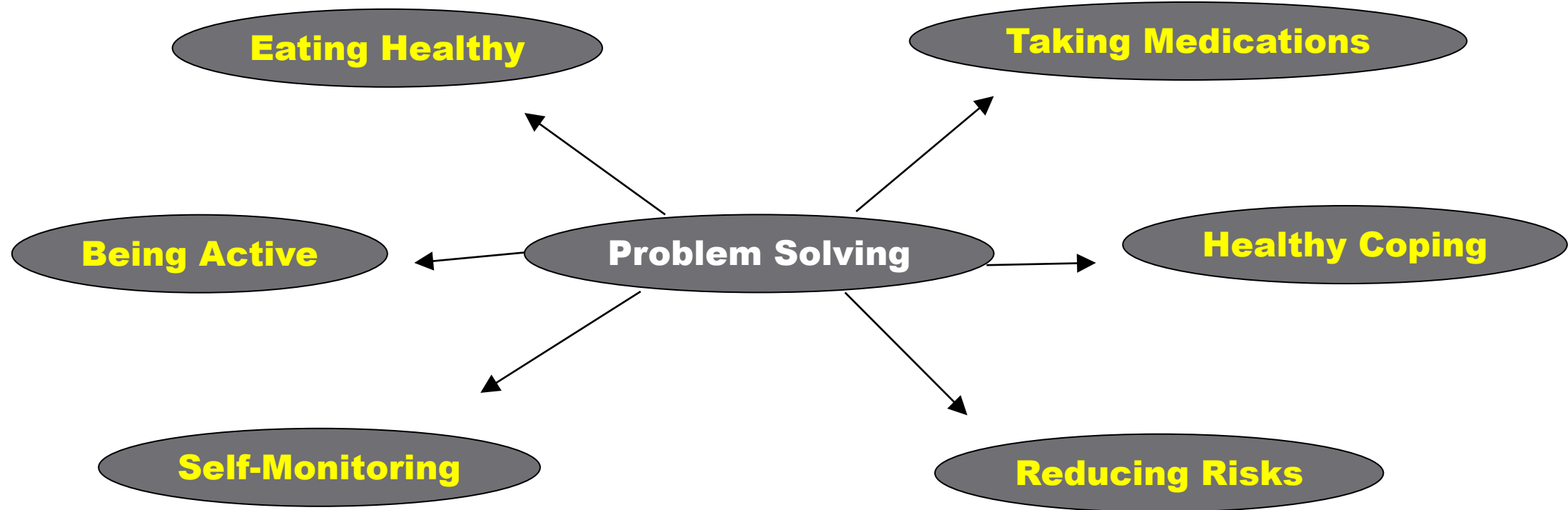
- The average patient with diabetes spends approximately 45 – 60 minutes per year in the physician's office for his/her diabetes management.
- This leaves 8,759 hours during which the patient is on his/her own to self-manage diabetes.

Fisher et al. 2007. *Centers for Disease Control and Prevention (CDC) Community Partnerships for Diabetes*

# What Patients Need to Perform Self-Management

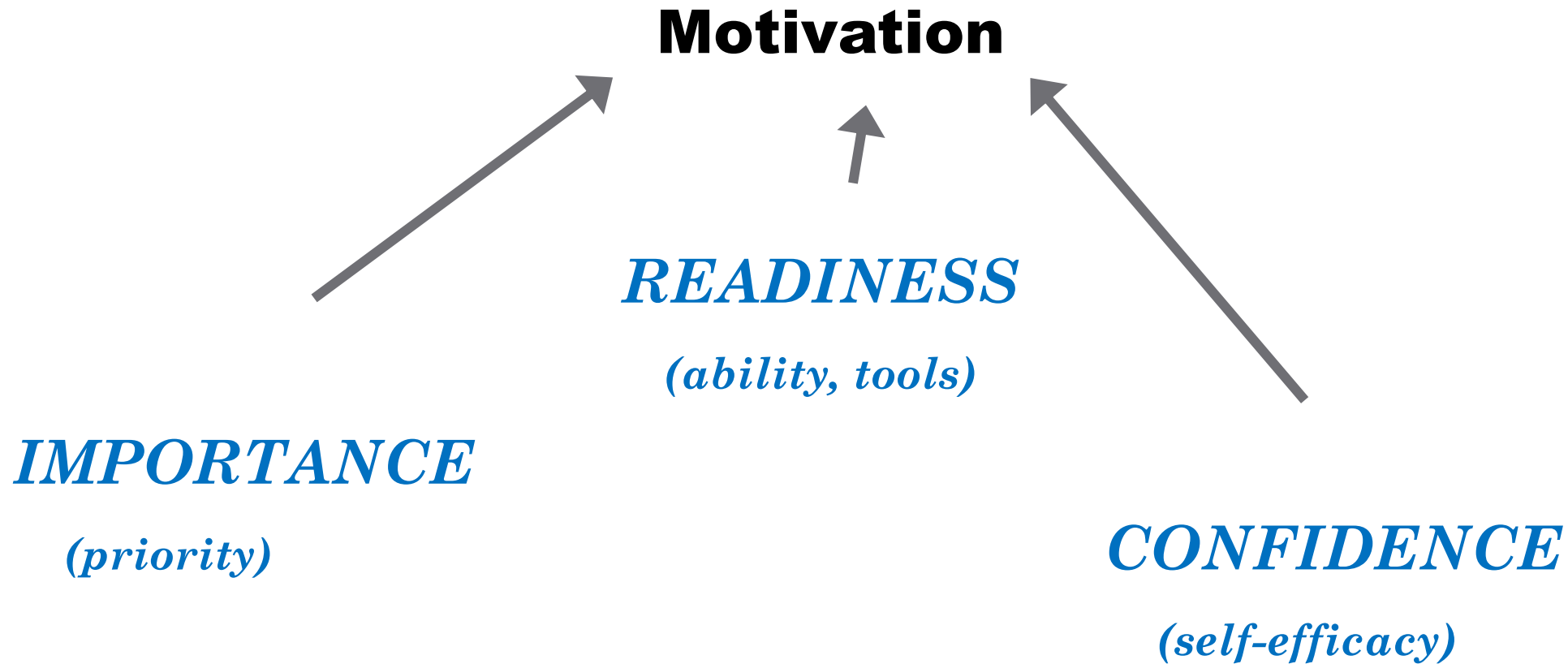
1. Good health care
2. Someone with whom to figure out how they want to manage their diabetes, set goals and action plans
3. Opportunity to learn skills they need to manage diabetes the best way they can (self-management education and counseling)
4. Ongoing support to help them
  - a. Figure out how to implement their plan
  - b. Stay motivated when things get tough
  - c. Get back in touch with the clinic when they need to

# Defining Diabetes Self-Management: The American Association of Diabetes Educators 7 Core Behaviors (AADE 7)

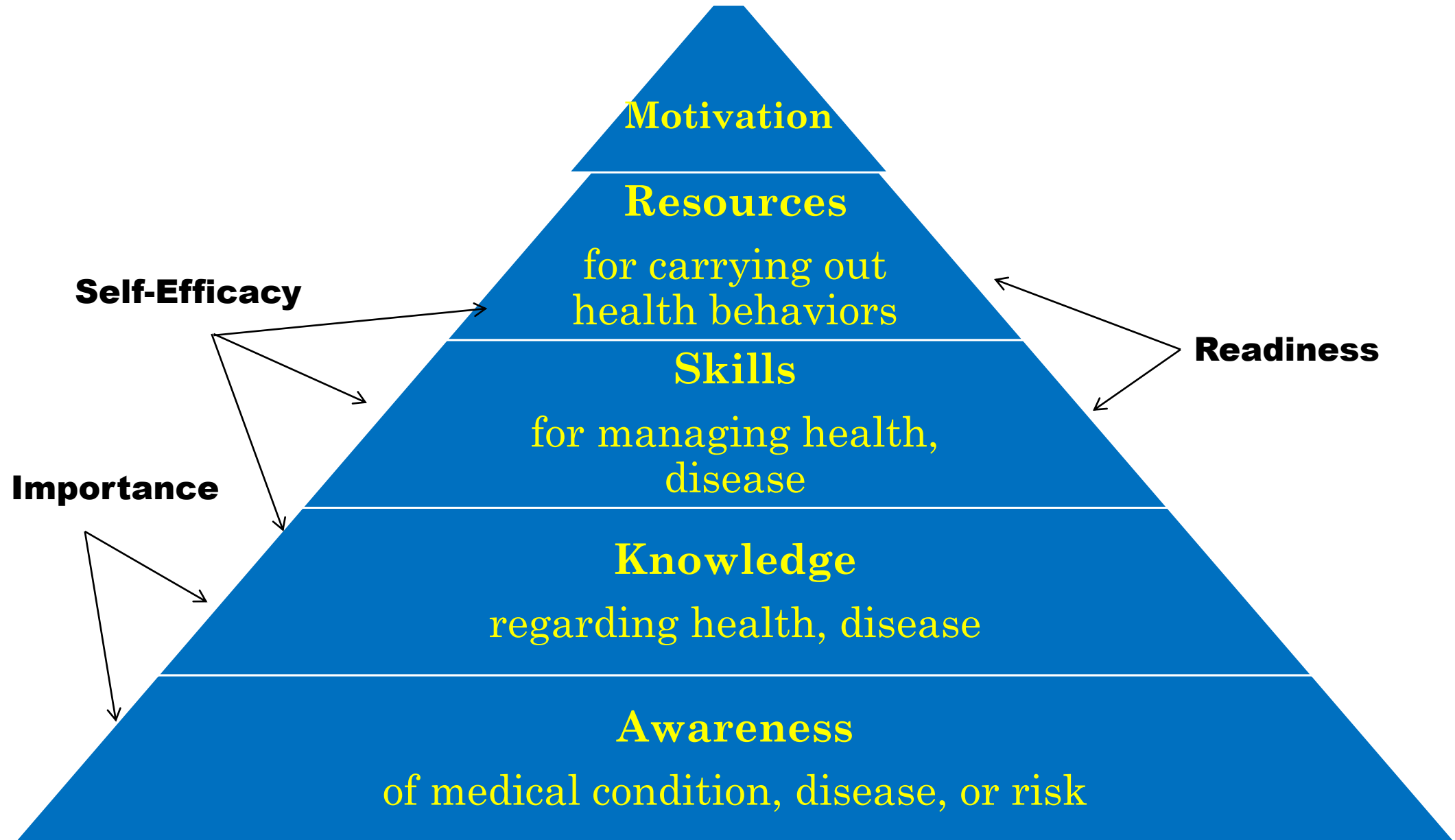


# The Problem with Ascribing Behavior Change Difficulties to Patient “Motivation”

Motivation should not automatically be assumed to be explanatory factor for poor health behaviors or lack of intentional behavioral change.



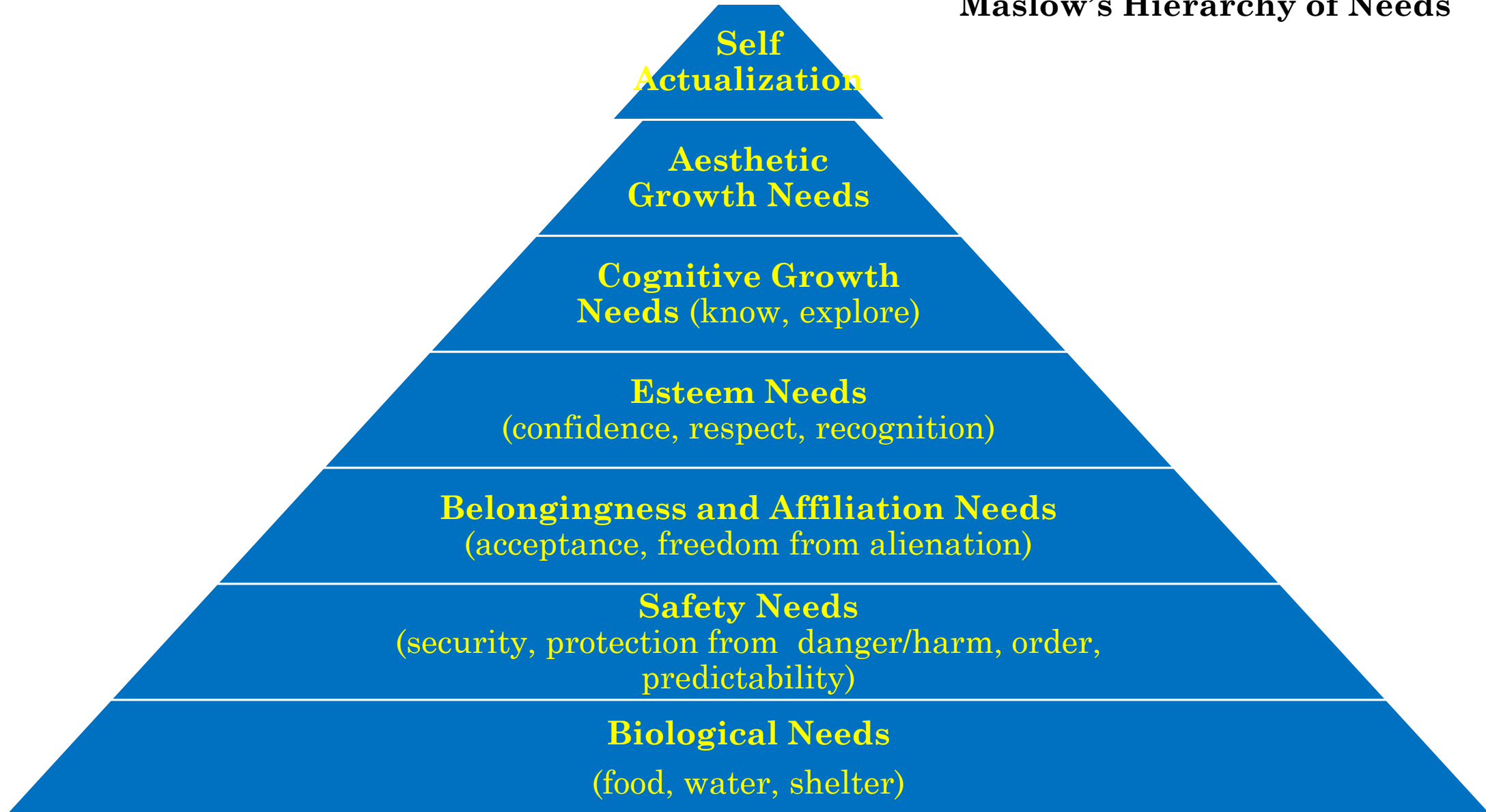
# Pre-Requisite Factors for Health Behavior Change





# Motivation and Socioeconomic Status

Maslow's Hierarchy of Needs



# The Challenge of Literacy, Health Literacy, and Functional Limitations: Especially in populations of health disparity



# Challenges to Usability and Effectiveness of Behavioral Interventions in Underserved Populations

- Accessibility of health information

(Presentation and format of health education)

- Literacy, health literacy
- Functional impairment and disability affecting receipt of information (vision impairment/blindness, hearing impairment, cognitive impairment)

- Usability of health information

(Content of health education)

- Environment and resources
- Cultural relevance and meaningfulness
- Suitability for persons with functional impairment and disability

# Racial and Socioeconomic Disparities in Literacy and Health Literacy in the U.S.

Kutner, M., Greenberg, E., Jin, Y., Boyle, B., Hsu, Y., and Dunleavy, E. (2007). *Literacy in Everyday Life: Results From the 2003 National Assessment of Adult Literacy (NCES 2007-480)*. U.S. Department of Education. Washington, DC: National Center for Education Statistics.

Kutner, M., Greenberg, E., Jin, Y., and Paulsen, C. (2006). *The Health Literacy of America's Adults: Results From the 2003 National Assessment of Adult Literacy (NCES 2006-83)*. U.S. Department of Education. Washington, DC: National Center for Education Statistics.

<http://nces.ed.gov/naal/>

# The Literacy of American Adults

## 2003 National Assessment of Adult Literacy (NAALS)

	Non-Hispanic White	Black	Hispanic
<b>Proficient</b> skills necessary to perform more complex and challenging literacy activities (reasoning, meaning)	17%	2%	4%
<b>Intermediate</b> skills necessary to perform moderately challenging literacy activities	51%	31%	23%
<b>Basic</b> skills necessary to perform simple and everyday literacy activities	25%	43%	30%
<b>Below Basic</b> no more than the most simple and concrete literacy skills	7%	24%	44%

The **Health** Literacy of American Adults  
2003 National Assessment of Adult Literacy (NAALS)

	Non-Hispanic White	Black	Hispanic
Proficient	14%	0%	4%
Intermediate	58%	41%	38%
Basic	19%	34%	25%
Below Basic	9%	24%	41%

# Decline in U.S. Literacy in Higher Educated from 1992 to 2003

Table 3-2. Average prose, document, and quantitative literacy scores of adults, by highest educational attainment: 1992 and 2003

Educational attainment	Prose		Document		Quantitative	
	1992	2003	1992	2003	1992	2003
Still in high school	268	262	270	265	263	261
Less than/some high school	216	207*	211	208	209	211
GED/high school equivalency	265	260	259	257	265	265
High school graduate	268	262*	261	258	267	269
Vocational/trade/business school	278	268*	273	267	280	279
Some college	292	287*	288	280*	295	294
Associate's/2-year degree	306	298*	301	291*	305	305
Bachelor's degree	325	314*	317	303*	324	323
Graduate studies/degree	340	327*	328	311*	336	332

\*Significantly different from 1992.

NOTE: Adults are defined as people 16 years of age and older living in households or prisons. Adults who could not be interviewed because of language spoken or cognitive or mental disabilities (3 percent in 2003 and 4 percent in 1992) are excluded from this table.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 1992 National Adult Literacy Survey and 2003 National Assessment of Adult Literacy.

# Plain Writing Act of 2010



PUBLIC LAW 111-274—OCT. 13, 2010

124 STAT. 2861

Public Law 111-274  
111th Congress

An Act

To enhance citizen access to Government information and services by establishing that Government documents issued to the public must be written clearly, and for other purposes.

Oct. 13, 2010  
[H.R. 946]

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,*

**SECTION 1. SHORT TITLE.**

Plain Writing Act  
of 2010.  
5 USC 301 note.

This Act may be cited as the “Plain Writing Act of 2010”.

**SEC. 2. PURPOSE.**

5 USC 301 note.

The purpose of this Act is to improve the effectiveness and accountability of Federal agencies to the public by promoting clear Government communication that the public can understand and use.

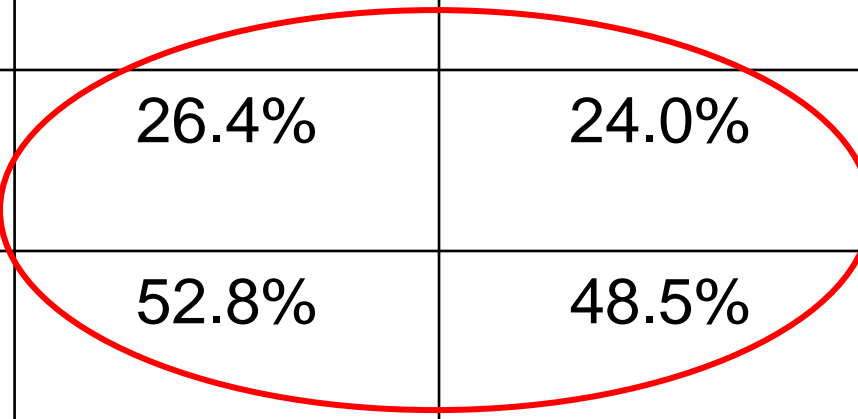


# 32 Consensus Criteria for Low Literacy Patient Education Materials

<b>Word Usage, Reading Level, and Sentence Length</b>	1. Scientific jargon avoided; technical terms are introduced with understandable explanation
	2. Vocabulary uses common words; multi-syllabic words (> 2-3 syllables) avoided
	3. Sentence length is < 15 words
	4. Writing is in active (vs. passive) voice
	5. <b>Reading grade level is <math>\leq</math> 5<sup>th</sup> grade</b>
<b>Typography</b>	6. Text is in uppercase and lowercase serif (best) or sans-serif
	7. Type size is $\geq$ 12 points (including text, tables, and captions)
	8. Typographic cues (bolding, bullets, size) emphasize key points
	9. Complex topics subdivided into smaller parts of $\leq$ 5 main points, $\leq$ 5 items per list
	10. Line length is $\leq$ 30-50 characters and spaces
	11. Use of ALL CAPS for long headers or running text is avoided
<b>Graphics, Illustrations, and Tables</b>	12. Cover graphic shows purpose of brochure, attracts attention, and is friendly
	13. Graphics are designed to be simple, age-appropriate, and familiar to readers
	14. Explanatory captions are included with each graphic
	15. Illustrations are on the same page adjacent to the related text
	16. Illustrations present key messages so reader can grasp idea from illustration alone
	17. Illustrations are not distracting

# Disability (Physical, Sensory, Mental) Among American Adults. U.S. Census Bureau, 2000

Age	Non-Hispanic White	Black	Hispanic
5 and older	18.3%	24.3%	20.9%
5 – 15 years	5.7%	7.0%	5.4%
16 – 64 years	16.2%	26.4%	24.0%
65 and older	40.0%	52.8%	48.5%



# Diabetes and Disability (NIDDK 2011; CDC 2010; (Golden et al. Endocrine Society Scientific Statement. J Clin Endocrinol Metab,2012)

- **Diabetes**
  - Accounts for 50% of all non-traumatic lower limb amputations
  - Leading cause of non-congenital blindness in U.S.
  - Leading cause of end-stage renal disease
  - Increased rates of cognitive impairment and dementia
- **Non-Hispanic Blacks with diabetes, as compared with White counterparts**
  - 46% higher rate of diabetic retinopathy
  - 4-fold higher rate of visual impairment secondary to retinopathy
  - 3.8 times higher incidence of ESRD
  - 2 – 10 times higher rate of LE amputation
  - 34% higher prevalence of stroke
  - Approximately 0.6% higher HbA1c
  - 2.3 times higher mortality from diabetes

# Modifications for Functional Limitations and Usability

Characteristic	Adaptation
Functional Limitations (e.g. vision, cognitive)	<ul style="list-style-type: none"><li>• Multimodal information delivery (print handouts, oral, and visual presentation using slides that matched pages in the notebooks)</li><li>• Black ink on white paper for contrast</li><li>• Font size 14 – 16</li><li>• Flat (non-gloss) paper</li><li>• Physical activity recommendations for older adults and persons with disabilities</li><li>• Information available about products for low-vision glucose monitoring</li></ul>

Characteristic	Adaptation
Behavioral Activation	<ul style="list-style-type: none"><li>• Content of information is behaviorally focused rather than medical information</li><li>• Specific “how to” information given</li><li>• Handouts contain activities/worksheets both for personalization of information and interaction with the content</li><li>• Food shopping/food selection recommendations are made relevant with regard to available resources (e.g., neighborhood and other commonly used stores, lower cost)</li><li>• Physical activity recommendations are made relevant with regard to environments and available resources, esp. for urban patients (e.g., household activities, stair climbing, planning the number of blocks to and from bus stop locations, community activities, using common items such as canned goods or detergent bottles for resistance exercises)</li></ul>

# Problem Solving as a Strategy for Behavior Change: The Problem Solving “How-To’s”



## In Brief

Problem solving is an essential skill for effective diabetes self-management. Evidence suggests that problem-solving therapy (PST) approaches, used in the context of broader diabetes educational or lifestyle interventions, may be effective for mood and select diabetes outcomes. As a stand-alone treatment, formal PST adapted for diabetes self-management is a promising behavioral intervention for improving health-related problem-solving, diabetes self-care behaviors, and disease control.

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# Evidence-Based Behavioral Treatments for Diabetes: Problem-Solving Therapy

Kristina P. Schumann, MA, June A. Sutherland, MS, Haseeb M. Majid, MA, and Felicia Hill-Briggs, PhD

Problem solving is a basic human thinking process. Many general counseling and psychotherapy approaches, such as cognitive behavioral therapy, include problem solving as a component of treatment for managing life problems and emotional disorders.<sup>1</sup> Similarly, educational and lifestyle interventions in diabetes often include elements of problem solving as part of broader intervention approaches.<sup>2</sup>

Among diabetes educators, problem solving is identified as necessary for patient mastery of diabetes self-management and as the skill most difficult to teach patients.<sup>3</sup> This article describes the origins of problem-solving therapy (PST) as a formal, stand-alone intervention approach for behavior change; application of this technique to diabetes care; and evidence of its effectiveness in improving diabetes outcomes.

Although problem solving is a counseling approach that may be incorporated within other intervention models, PST is a stand-alone intervention with a longstanding history. PST took root in clinical and counseling psychology in the 1960s and 1970s to address a variety of mental health disorders, including schizophrenia and psychotic disorders, depression and suicidality, social phobia, generalized anxiety disorder, and posttraumatic stress disorder.<sup>11,12</sup> PST has also been used to address marital/family distress, lifestyle management in people with mental retardation, stress management, ineffective coping, and substance abuse.<sup>11</sup>

There is a substantial evidence base for the effectiveness of PST in reducing symptoms of depression, anxiety, and stress.<sup>12</sup> Moreover, problem-solving approaches have been found effective in helping patients cope with cancer

# AADE 7

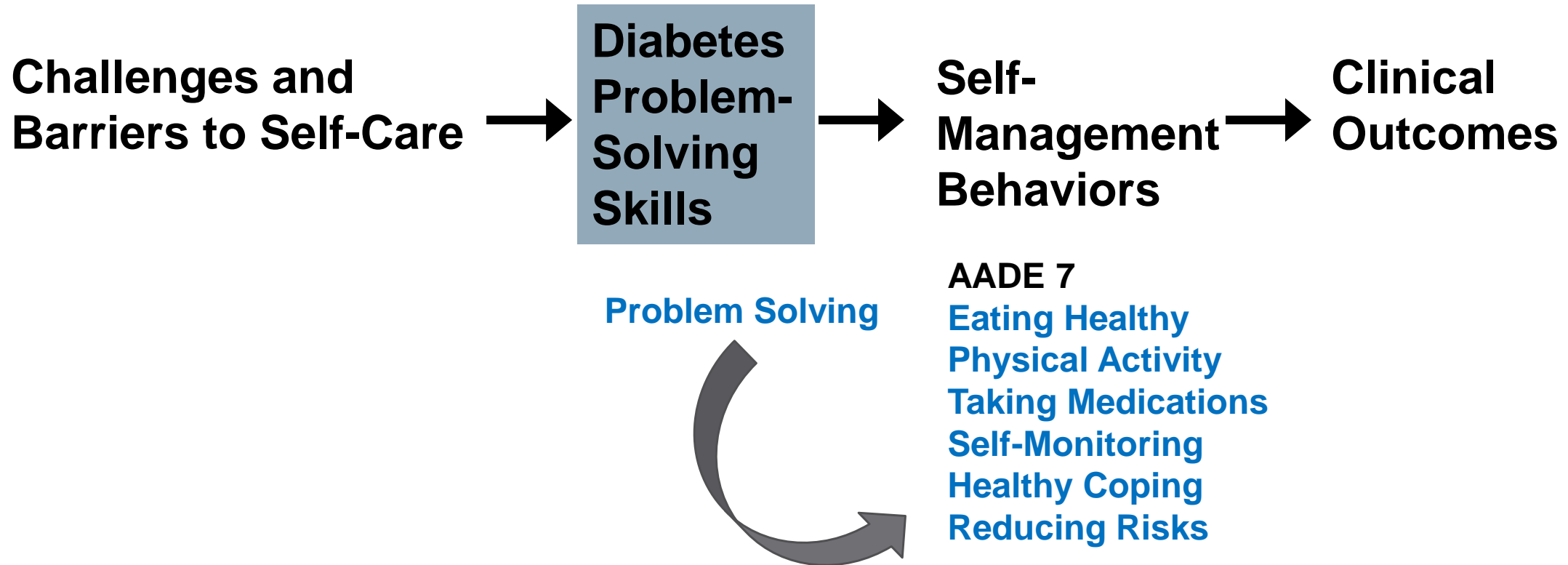
Problem Solving: A learned behavior that includes generating a set of potential strategies for problem resolution, selecting the most appropriate strategy, applying the strategy, and evaluating the effectiveness of the strategy. *Mulcahy, 2006*

Problem-solving skills are needed to make treatment decisions from glucose self-monitoring, based upon interrelations of multiple self-care behaviors (e.g. medication, physical activity, food intake). *Wysocki, 1989; Bonnet, 1998*



# Patient-Reported Barriers to Self-Management

- Socioeconomic barriers (money, housing, street crime) Family barriers (caretaker responsibilities, family problems)
- Lack of access/resources for optimal nutrition Medication prescriptions run out, forget to take
- medications, do not believe in medications
- Dealing with pain and physical discomfort Dealing with stress and emotions
- Competing life priorities requiring attention and resources
- Poor understanding of health information/prior education



ADA, 2000; AADE 2006  
Glasgow et al., *Diabetes Care*, 2007

# Problem Solving as Behavior Change

Cognitive psychology defines problem solving as involving three (3) components:

1. The individual is goal directed.
2. Reaching a solution or goal requires a sequence of steps.
3. The steps involved are not automatic or immediately known (require a series of mental processes).

Eyessenk (1993)

# Components of Problem Solving in Diabetes Self-Management

- Problem-Solving Skill or Approach
  - Rational
  - Careless/Impulsive or Avoidant
- Problem-Solving Orientation or Motivation
  - Positive, views problem as opportunity, positive expectancy
  - Negative, views problem as threat, negative expectancy
- Domain-Specific (Diabetes) Knowledge
  - Sufficient fund of knowledge, able to apply
  - Insufficient, unable to apply
- Transfer of Past Experience/Learning
  - Effective transfer of past experience to new situations
  - Ineffective transfer; past experience interferes with new learning

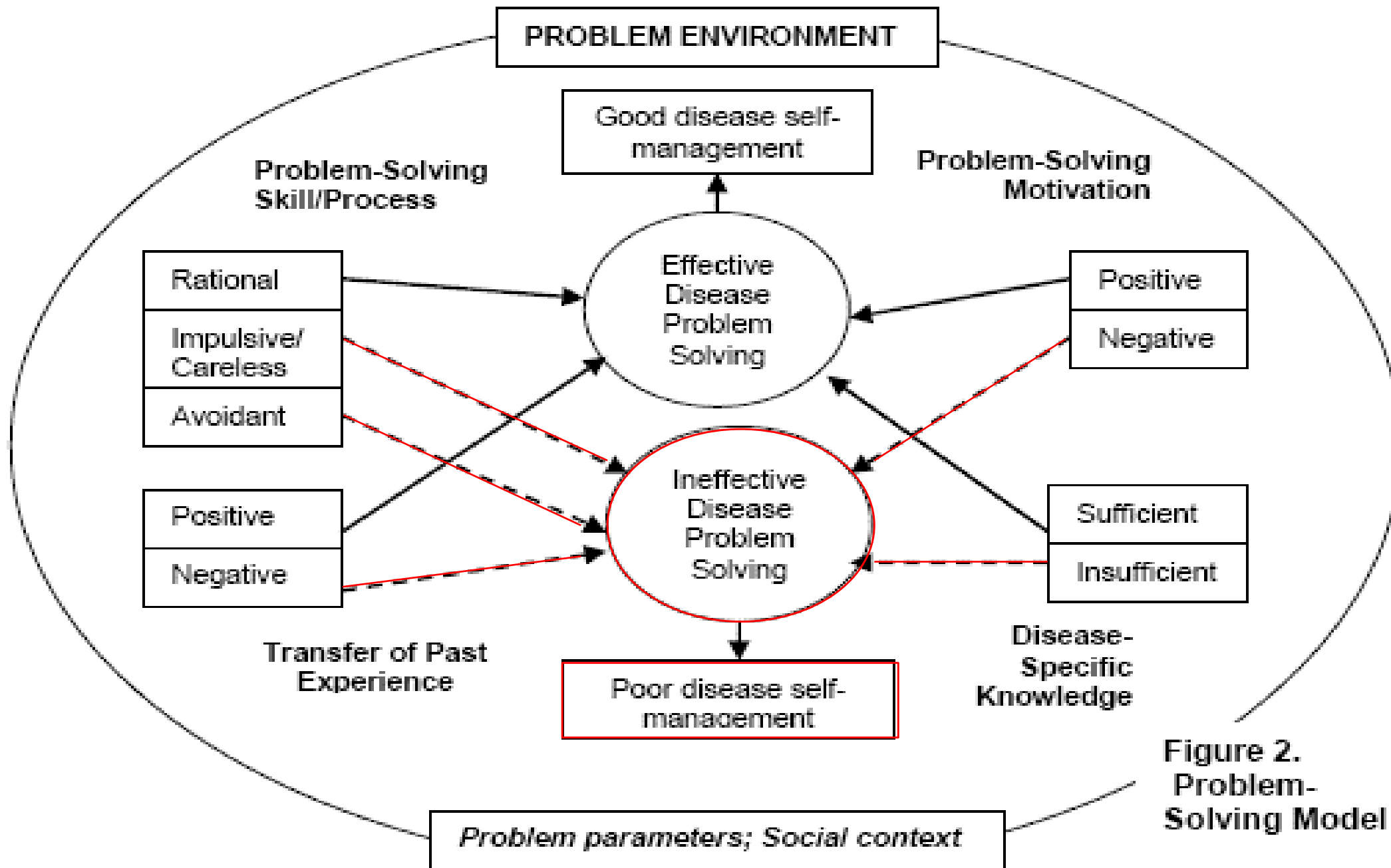


Figure 2.  
Problem-  
Solving Model

# Examples of How the Problem-Solving Components Affect Diabetes Behaviors

## *Problem-Solving Coding Categories, Definitions, and Sample Focus Group Responses\**

<b>Coding Category</b>	<b>Definition</b>	<b>Sample Responses</b>
Positive disease and problem-solving orientation	Positive attitudes, emotions, beliefs, or expectancies about diabetes and managing diabetes-related problems; motivation and commitment to self-management	"At first [having diabetes] worried me, but after I began to start taking care of myself, I saw [taking care of myself] can help, so I just try to live on." "It don't make a difference, problems coming up, because I can deal with it. It don't worry me."
Negative disease and problem-solving orientation	Negative attitudes, emotions, beliefs, or expectancies; poor motivation and commitment to self-management	"I try to conquer it, but it's conquering me." "It seems like there's no reward, and then it makes you feel like, 'If I'm gonna be sick anyway, I might as well go on and cheat.'"
Rational problem-solving process	Logical steps taken toward solving a problem (eg, identifying the problem, generating alternatives, and evaluating alternatives) or evidence of effective solutions	"I do one half hour on the exercise bike and then I get off it. But sometimes it hurts. So, this is what I'm gonna try now—if I can't do it a half hour, I'll just try for maybe 15 minutes. Anything is better than nothing." "I have four children in my care, foster children, and they don't eat the way I do, so I prepare my food separate from their food." "You feel the sorriness coming out and you say, 'This ain't no way to feel.' I have my crocheting right there and a word book right there. I go to the book or go to the crocheting."



Careless/impulsive problem-solving process	Lack of effort to find an effective solution to a problem, impulsive responding leading to ineffective solutions, or inconsistent use of effective problem solving	<p>"If I feel I don't want to do it [SMBG], I just don't do it."</p> <p>"The diabetes pill was making me go to the bathroom a lot, and I said, 'Well, I can't deal with this,' so I just stopped [taking] it."</p> <p>"I get so disgusted sometimes, I say I'm just gonna stop. I'm just gonna do whatever."</p>
Avoidant problem-solving process	Efforts to escape or avoid dealing with diabetes or a diabetes-related problem situation, leading to ineffective results	<p>"I sleep. I mean, there's nothing I can do. I just lay down and go to sleep."</p> <p>"I used to drink all the time to deal with [pain], but it only lasts until you get sober again, then you still hurting."</p>
Positive transfer of past experience/learning	Evidence of how a past experience with diabetes, either personally or through others, led to a desire or an effort/behavior change to manage diabetes more effectively	<p>"I take my medication now because I know what it's going to do to me if I don't. I haven't had problems with taking my medication since I had the problem one time and my sugar went way up."</p> <p>"They almost put me in the hospital because I ate [food product] every day for a week, and there's too much salt in it for me. So, now I only eat it sometimes, and I don't drink the juice that's left in it."</p>
Negative transfer of past experience/learning	Evidence of how a past experience with diabetes, either personally or through others, led to poor motivation or ineffective solutions, resulting in ineffective self-management behavior	<p>"I eat what I want and that's because my family members had diabetes, and I saw them eat what they wanted and do what they wanted."</p> <p>"I get sick if I don't take my medicine, so I stay sick. I stay sick a lot."</p>

*\*Problem-solving coding categories and definitions based on Hill-Briggs integrated Problem-Solving Model of Disease Self-Management.<sup>3</sup>*

# Key Elements of Problem-Solving Training

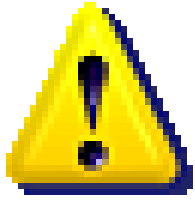
*Malouf JM. Clin Psychol Review, 2006*

- 8 – 16 sessions of 1.5 to 2 hours in duration each
- Use of homework
- Inclusion of problem-solving orientation/motivation training as well as rational problem-solving training
- Rational problem-solving training
  - Identifying a problem when it occurs
  - Defining a problem
  - Understanding the problem
  - Setting goals related to the problem
  - Generating alternative solutions
  - Evaluating and choosing the best alternatives
  - Implementing the chosen alternative solutions
  - Evaluating the efficacy of the effort at problem solving



# Modules

Table 1. Traditional PST	
Key Components	Description
Evidence-based clinical applications	Schizophrenia and psychotic disorders, depression and suicidality, social phobia, generalized anxiety disorder, post-traumatic stress disorder, marital/family distress, mental retardation, stress management, ineffective coping, substance abuse
Number of sessions	8–15
Modules	<p>Module 1: Initial structuring</p> <p>Module 2: Problem-solving assessment</p> <p>Module 3: Obstacles of effective problem solving: limited capacity of the conscious mind</p> <p>Module 4: Problem orientation: introduction and fostering self-efficacy beliefs</p> <p>Module 5: Problem orientation: problem recognition</p> <p>Module 6: Problem orientation: viewing problems as challenges</p> <p>Module 7: Problem orientation: use and control of emotions in problem solving</p> <p>Module 8: Problem orientation: STOP and THINK!</p> <p>Module 9: Problem definition and formulation</p> <p>Module 10: Generation of alternative solutions</p> <p>Module 11: Decision making</p> <p>Module 12: Solution implementation and verification</p> <p>Module 13: Guided practice</p> <p>Module 14: Rapid problem solving (optional)</p> <p>Module 15: Communication skills and interpersonal problem solving (optional)</p>
Supporting patient materials	<i>Solving Life's Problems: A 5-Step Guide to Enhanced Well-Being</i> <sup>18</sup>



# When is Problem Solving Not Indicated or Advised?

- Direct instruction vs. problem solving when:
  - Problem is well-defined and straightforward
  - Problem has a single best strategy for resolution
  - Use of trial and error could be detrimental or life threatening
- Examples: treating acute complications of hypoglycemia, hyperglycemia, and illness/sick days
- Problem solve for planning to prevent and to reduce risk associated with these acute complications

# What Makes Problem Solving Work?

- **Who is the problem solver?**
  - Educator/health care provider
  - Patient
  - Caretaker/parent
- **What role will the patient assume in the problem solving?**
  - Passive recipient
  - Shared participant
  - Empowered problem solver



<i><b>Educator's View of Patient</b></i>	<i><b>Impact</b></i>	<i><b>Patient's View of Educator</b></i>
<b>Patient is the problem</b>	<b>Failure expectation approach.</b> Conflict is high, deadlocked, stuck	Professionals have had their chance.
<b>Patient has a problem I can solve</b>	<b>Compliance expectation approach.</b> Conflict remains; patient resistant or passive; "it won't work"	Professionals decide without knowing my difficulties.
<b>Patient is a problem solver</b>	<b>Mutuality expectation approach.</b> Conflict resolved.	Professionals know my difficulties and support me in solving them.

Adapted from Sage Publications: Zoffman & Kirkevold. Qual Health Res, 2005

# On What Problems Does the Educator Intervene?

There are 3 levels of problem identification. Problem-solving intervention identifies level 1 and 2 problems, but targets Level 3.

- *Level 1*

- Clinical Markers and Emergencies  
(e.g. suboptimal clinical control, ER visits, hospitalizations)

- *Level 2*

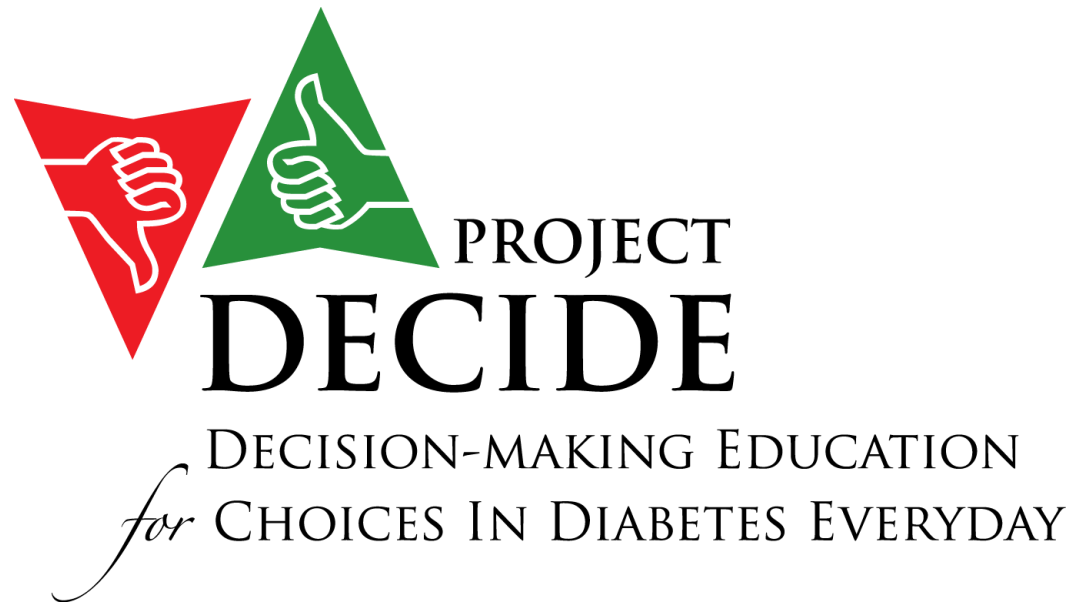
- Problematic Self-Management Behaviors  
(e.g. being inactive, unhealthy eating, medication nonadherence)

- *Level 3*

- Barriers to Performing Self-Management Behaviors  
(e.g. technical skill, financial problems, environmental and psychosocial barriers)

# The DECIDE Program Model for Behavior Change in Diabetes

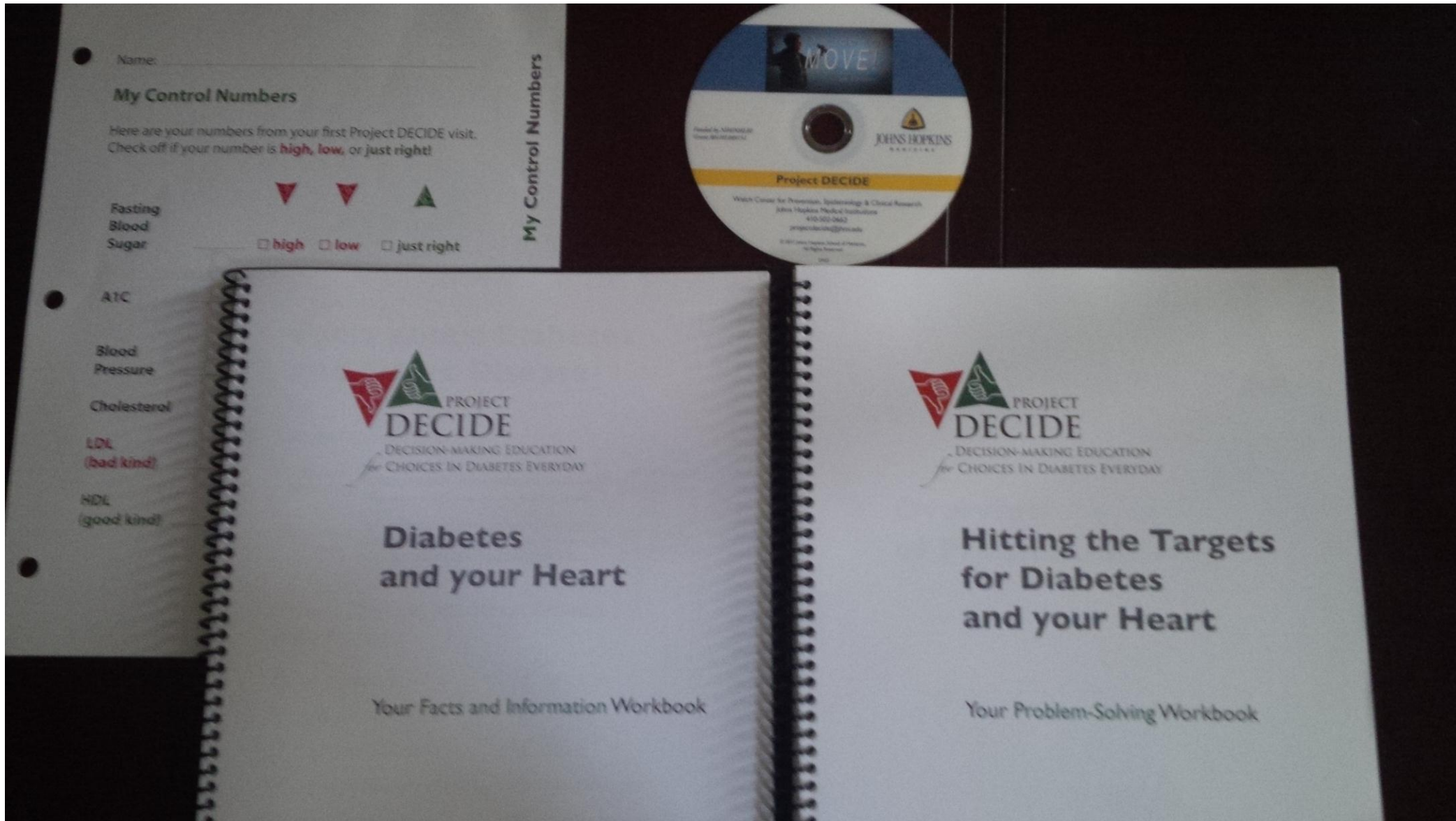
National Institutes of Health (NIH/NHLBI): K01HL076644, R01HL089751  
American Diabetes Association Innovation Award: 7-06-IN-07



# DECIDE Program Modules

Table 2. DECIDE Diabetes PST	
Key Components	Description
Evidence-based clinical applications	Diabetes self-management
Number of sessions	9
Modules	<p>Diabetes and CVD education module</p> <p>Problem-solving module 1: overview of problem solving</p> <p>Problem-solving module 2: taking control of stress and emotions (problem orientation)</p> <p>Problem-solving module 3: what makes a problem a problem? (problem identification)</p> <p>Problem-solving module 4: know thyself: set goals that fit your life (goal setting)</p> <p>Problem-solving module 5: different ways to reach health goals: knowing your options (generating alternative solutions)</p> <p>Problem-solving module 6: that sounds good but does it work for me? (decision making)</p> <p>Problem-solving module 7: take action and know the signs (solution implementation and verification)</p> <p>Problem-solving module 8: putting it all together (review and reinforcement)</p>
Supporting patient materials	<p><i>Diabetes and Your Heart: Your Facts and Information Workbook</i></p> <p><i>Hitting the Targets for Diabetes and Your Heart: Your Problem-Solving Workbook</i></p>
Techniques used	Didactic approaches, coaching, modeling, shaping, rehearsal, performance feedback, and positive reinforcement
Related assessments	<p>Diabetes Problem-Solving Scale<sup>30</sup></p> <p>Health Problem-Solving Scale<sup>31</sup></p>

# Program Materials





# *DECIDE to MOVE!* Physical Activity video

## Development and Evaluation of the *DECIDE to Move!* Physical Activity Educational Video

### Purpose

To develop a video that provides accessible and usable information about the importance of physical activity to type 2 diabetes self-management and ways of incorporating physical activity into everyday life.

### Conclusion

A 15-minute physical activity educational video narrated by US Surgeon General Dr Regina Benjamin was developed and evaluated. The video addresses the following topics: the effects of exercise on diabetes, preparations for beginning physical activity, types of physical activity, safety considerations (eg, awareness of symptoms of hypoglycemia during activity), and goal setting. Two patient screening groups were held for evaluation and revision of the video. Patient satisfaction ratings ranged 4.6 to 4.9 out of a possible 5.0 on dimensions of overall satisfaction, how informative they found the video to be, how well the video held their interest and attention, how easy the video was to understand, and how easy the video was to see and hear. Patients reported the educational video effective in empowering them to take strides toward increasing and maintaining physical activity in their lives. The tool is currently used in a clinical research trial, Project DECIDE, as one component of a diabetes and cardiovascular disease self-management program.

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The video is available to the public electronically via the web-QR Code Here - (<http://www.youtube.com/watch?v=z-UfMvBoGVU>), or to obtain single or multiple copies of the DVD, readers can make a request via e-mail at [projectdecide@jhu.edu](mailto:projectdecide@jhu.edu) or phone (410) 502-9662.

**Acknowledgments:** This research was funded by the National Institutes of Health/National Heart, Lung, and Blood Institute (grant R01HL089751) and the MDCR Diabetes Research and Training Center (grant P60 DK079637).



- 2011 bronze Telly Award winner, Health and Wellness Education video
- Available publicly on YouTube: <http://www.youtube.com/watch?v=z-UfMvBoGVU>

# Getting to the Problems and Barriers

## What's the problem?

Know the problem and **set a goal.**

### Step 1: Are your numbers a problem?

Look at your "My Control Numbers" page. Write down here your numbers that **did not** hit the target. These are the numbers for you to work on making better. You want them all to hit the target.

A1C \_\_\_\_\_ (target less than 7.0)

Blood Pressure \_\_\_\_\_ (target less than 130/80)

LDL (**bad**) cholesterol \_\_\_\_\_ (target less than 100)

HDL (**good**) cholesterol \_\_\_\_\_ (target more than 50 - women)  
(target more than 40 - men)

1

### Step 2: What's making your numbers a problem?

Look at your "For the Record..." page. What behaviors are hard for you to stick to?

- ☐ Testing your blood sugar?
- ☐ Taking your medicines?
- ☐ Eating healthy?
- ☐ Getting more physical activity?

What will you work on to help hit your target numbers?  
Choose one goal to start. Know thyself — be real with your goal.

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### Step 4: What gets in your way or stops you?

What makes it hard to hit that goal you put in Step 3?  
What gets in your way?






- ☐ What you think, believe, or how you feel about it?
- ☐ Stress or how you handle things?
- ☐ Other responsibilities or priorities?
- ☐ Convenience or doing what is easy?
- ☐ People get in the way? How? \_\_\_\_\_
- ☐ Physical problem in the way? What? \_\_\_\_\_
- ☐ Practical problem in the way? What? \_\_\_\_\_
- ☐ Something else? \_\_\_\_\_








# Problem Orientation

## Positive and **Negative** Ways of Thinking

### Positive Problem Orientation

-  Helps you manage your problems.
-  Helps you view problems as something to conquer rather than something that conquers you.
-  Helps you feel hopeful and believe problems can be solved.
-  Helps you believe in yourself and stay determined to fight.
-  Helps you take good care of your diabetes.

### **Negative** Problem Orientation

-  Gets in the way of dealing with your problems.
-  Makes you feel threatened by your problems. So, you tend to either avoid it or try to deal with it quickly, even if what you do isn't the best thing to do.
-  Makes you doubt yourself or blame yourself.
-  Leads to frustration and worry when you have a problem to face.
-  Gets in the way of taking care of your diabetes.

## Thinking that makes it hard to...

*...keep going!*

When it comes to taking care of your diabetes, do you ever think or feel like this:

- ☐ Feel tired of doing what you need to do for your health.
- ☐ Do not want to do what you are supposed to.
- ☐ Talk yourself out of doing the right thing.
- ☐ Think that you will have bad problems because of diabetes no matter what.
- ☐ Want to forget you have diabetes.
- ☐ Want to avoid dealing with diabetes and problems controlling it.
- ☐ Feel angry that you have diabetes.
- ☐ Think it is not worth the effort or not feel sure it is worth it.
- ☐ Think no one else can understand.
- ☐ Think that you cannot change.
- ☐ Think that you cannot stick with your plan.
- ☐ Feel sad, down, depressed.
- ☐ Others:

# Problem Selection and Goal Setting

## Planning for *better health!*

Take time this week to find out what problems stopped you from taking the best care of your health. Then think about...  
**Can the problem be changed or not?** This will help you choose what things you can do for *better health!*

Use this form to keep track.

Date	What Problems Stopped You?	What Can You Do?	
		Change the problem	Change how you feel about it / deal with it

3

When you...

...set a goal!



**Be realistic.**

Don't make a goal that you will not do.



**Be specific.**

State exactly what it is that you want to happen. If the goal is too general, it won't help you plan how to reach it.



**Focus on action.**

State your goal in terms of what you will do.



**Make it something you can measure.**

State your goal in a way that you can measure. This will help you track how close you are coming — and when you have reached it.



**Think about goals that change a problem you can change.**



**Think about goals that change how you think or feel about a problem you can't change.**

4



# Evaluating Options and Decision-Making

WORKSHEET

Choosing what you will do!

Choose a problem. Write down options to try. Circle the **Thumb Up** symbol if you think the option will have a **good** effect or **Yes**. Circle the **Thumb Down** symbol if you think it will have a **bad** effect or **No**, for each of the columns.

Then choose the option with the most (+)'s!

Problem/Goal: \_\_\_\_\_

Options I Can Try	Effect on Me	Effect on Others	Short-Term Effect	Long-Term Effect	Will it Work?	Can I Do It?
	▲	▲	▲	▲	▲	▲
	▼	▼	▼	▼	▼	▼
	▲	▲	▲	▲	▲	▲
	▼	▼	▼	▼	▼	▼
	▲	▲	▲	▲	▲	▲
	▼	▼	▼	▼	▼	▼
	▲	▲	▲	▲	▲	▲
	▼	▼	▼	▼	▼	▼

5

3

Keep track of what you did when problems came up.  
Write some of these down. For each one, figure out what your **priority** and **style** was.

Problem and What I Did

My Priority

My Style

☐ My health

☐ Other priority \_\_\_\_\_

☐ Get what I want now

☐ What I want later, long-term

☐ Stop, think, options, plan

☐ Be quick, impulsive

☐ Be careless, not careful

☐ Do nothing, avoid

☐ My health

☐ Other priority \_\_\_\_\_

☐ Get what I want now

☐ What I want later, long-term

☐ Stop, think, options, plan

☐ Be quick, impulsive

☐ Be careless, not careful

☐ Do nothing, avoid

☐ My health

☐ Other priority \_\_\_\_\_

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☐ What I want later, long-term

☐ Stop, think, options, plan

☐ Be quick, impulsive

☐ Be careless, not careful

☐ Do nothing, avoid

9

# Learning from Experience

- How do you know if what you are doing is working for better health?

*Know the signs!*

*Learn from your experiences!*

- ② What signs tell you that things are on the **wrong** track?

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7

- ② What signs tell you that you are **losing interest** or focus?

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- ② What signs tell you that things are on the **right** track?

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- How is it going?

*You are doing it, making a change!*

To keep it up, you have to stop and take a look at how it is going.

- ② Did things happen the way you thought they would? ...the way you wanted them to?

What did? \_\_\_\_\_

What didn't? \_\_\_\_\_

- ② What is working well for you? \_\_\_\_\_

How will you keep doing this? \_\_\_\_\_

- ② Is something not working for you? \_\_\_\_\_

What is the problem with this? \_\_\_\_\_

How will you change this? \_\_\_\_\_

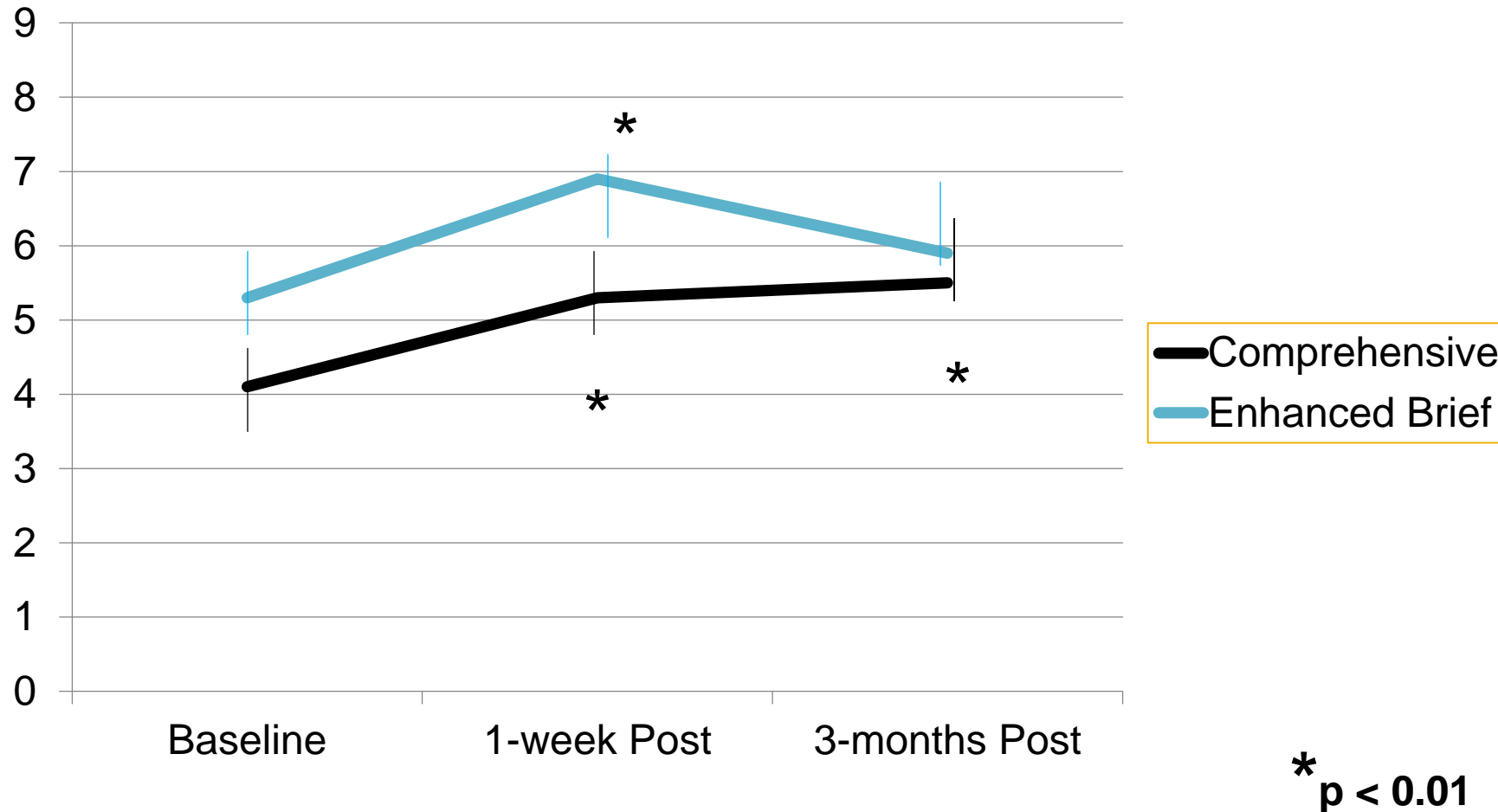
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Does it work?



# Effect on Diabetes and CVD Knowledge

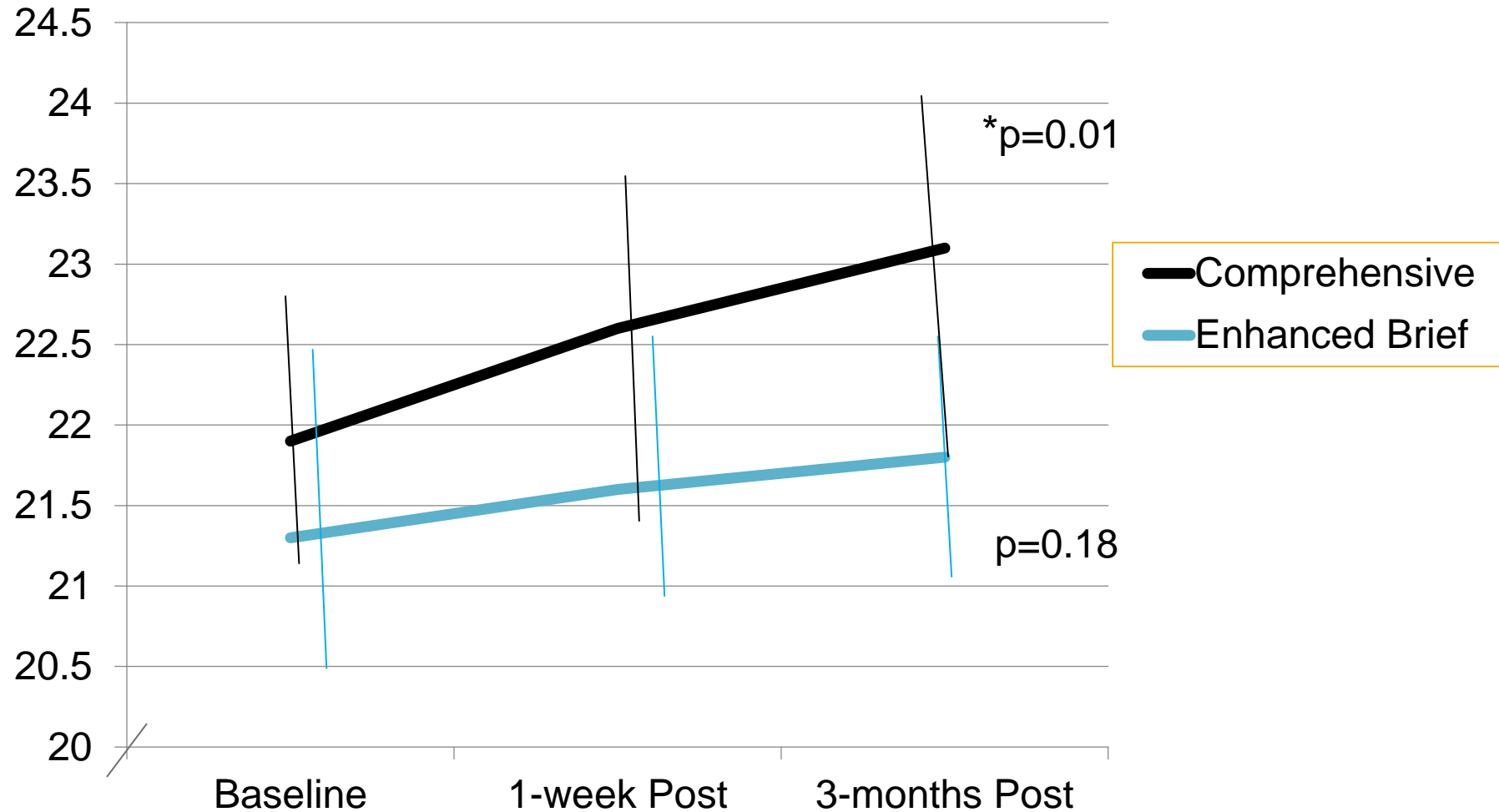
(mixed effects model with 95% Confidence Intervals)



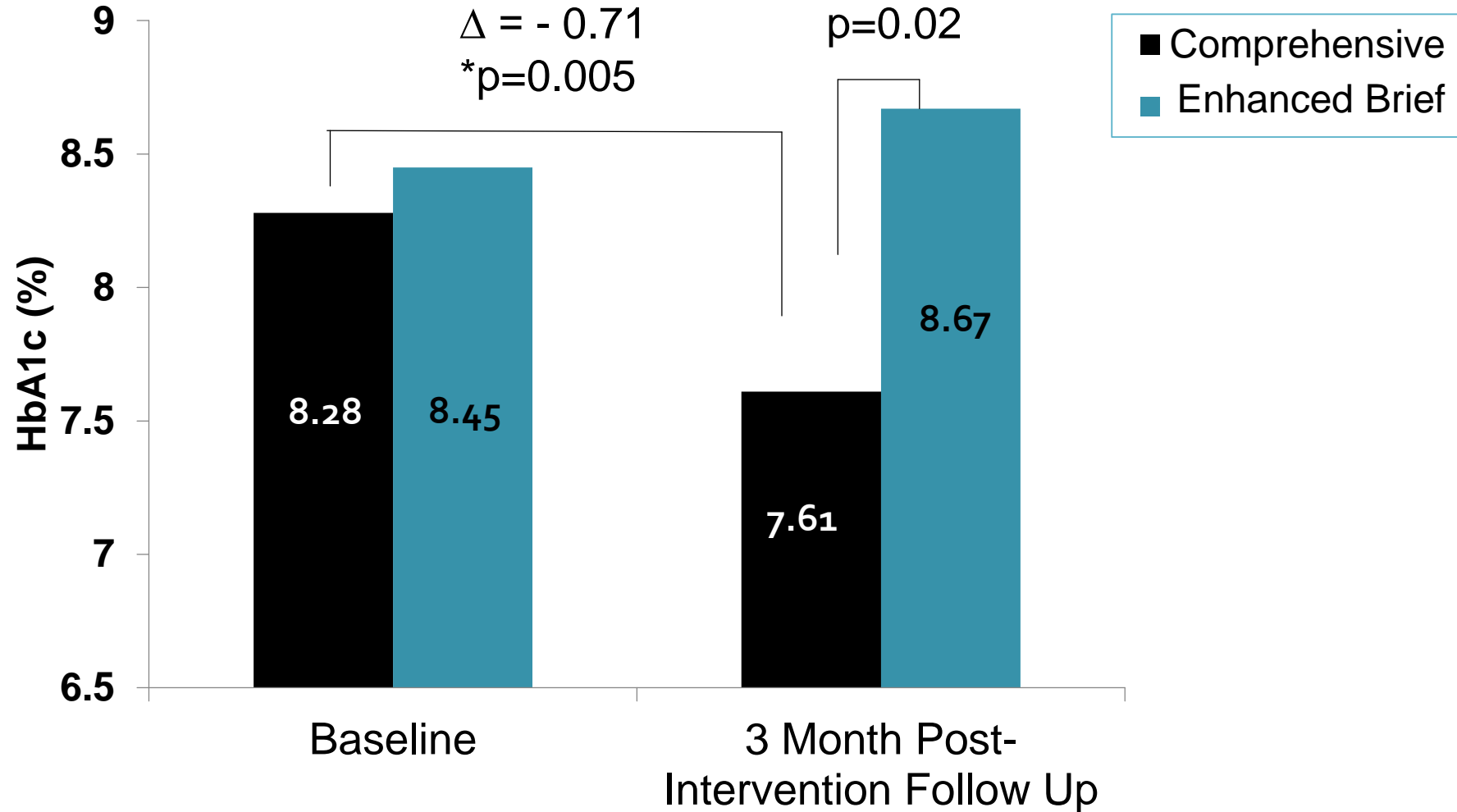


# Effect on Problem Solving Skills (HPSS)

(mixed effects model with 95% Confidence Intervals)



# Change in A1C at 3-Mos Post-Intervention



# Suboptimal Lipids and Blood Pressure in DECIDE Comprehensive Group

Clinical Value	% of Participants Suboptimal at Baseline	Median Reduction Among Suboptimal Participants
LDL (mg/dl)	27%	-25.0
SBP (mmHg)	69%	-14.67
DBP (mmHg)	45%	-7.17

# Change in Self-Management Behaviors (SDSCA)

Comprehensive		Enhanced Brief	
Baseline (mean)	3-month Post ( $\Delta$ )	Baseline (mean)	3-month Post ( $\Delta$ )
61.0	4.0 [0.1, 7.8] <i>*p&lt;0.01</i>	65.4	2.9 [-1.0, 6.8]

- Specific changes in health behaviors
  - Mean number of days eating a healthful diet increased from 3.5 to 6.0 ( $p<0.01$ )
  - Mean number of days taking medications increased from 6.0 to 6.9 (n.s.)
  - Mean number of days engaging in physical activity increased from 2.4 to 3.4 (n.s.)

# Examples of Individualized Goals Accomplished by Intervention Participants

<b>Taking Medications</b>	<ul style="list-style-type: none"><li>▪Used pharmacist to contact physician when prescriptions ran out instead of waiting until next scheduled appointment to get new prescriptions or refills.</li><li>▪Moved medications to a “survival need” list when budgeting, rather than considering it a non-priority dispensable item.</li></ul>
<b>Self-Monitoring</b>	<ul style="list-style-type: none"><li>▪At home, used blood sugar self-monitoring and blood pressure monitoring to test effects of food choices and medication on blood sugar and blood pressure, respectively.</li></ul>
<b>Eating Healthy</b>	<ul style="list-style-type: none"><li>▪Stopped using lard to cook and fry foods and replaced it with canola oil and occasional olive oil.</li></ul>
<b>Increasing Physical Activity</b>	<ul style="list-style-type: none"><li>▪Did leg and arm movements while sitting and watching TV.</li><li>▪Took a walk around the house (inside) during commercials.</li></ul>
<b>Participatory Decision Making/Self Advocacy</b>	<ul style="list-style-type: none"><li>▪Spoke with physicians about communicating their lab results as soon as possible in order to help them evaluate their self-management outcomes.</li><li>▪Requested local stores carry healthy food products.</li><li>▪Found stores that carry healthier foods and arranged transportation (bus routes, rides) to get there.</li></ul>

# Patient Ratings of Intervention Accessibility and Usability (scale from 1 to 5 )

	Comprehensive	Enhanced Brief
How helpful were the classes?	4.9	4.7
How much did you learn from the classes?	4.9	4.4*
How much information was new to you?	4.6	4.0*
How easy to understand was the information presented during the class?	4.9	5.0
How easy was the information to see (size, amount) during the class?	4.9	4.8
How helpful was the information you received in the binder/notebook?	4.8	4.7
How easy to understand was the information in your binder/notebook?	4.8	4.7
How easy to see was the information in your binder/notebook?	4.8	4.7
Overall, how satisfied were you with the self-management program you received?	4.7	4.8

# Development and Pilot Evaluation of Literacy-Adapted Diabetes and CVD Education in Urban, Diabetic African Americans

Felicia Hill-Briggs, PhD<sup>1,2,3,4,8</sup>, Ronda Renosky, MEd<sup>5</sup>, Mariana Lazo, MD, MPH<sup>1,6</sup>, Lee Bone, MPH<sup>2</sup>, Martha Hill, PhD<sup>3</sup>, David Levine, MD, MPH, ScD<sup>1,2,3</sup>, Frederick L. Brancati, MD, MHS<sup>1,6</sup>, and Mark Peyrot, PhD<sup>1,7</sup>

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**BACKGROUND:** Despite prevalent low literacy nationally, empirical research on the development and testing of literacy-adapted patient education remains limited.

**OBJECTIVE:** To describe procedures for developing and evaluating usability and acceptability of an adapted diabetes and CVD patient education.

**DESIGN:** Materials adaptation for literacy demand and behavioral activation criteria, and pre-/post-test intervention evaluation design.

**PARTICIPANTS:** Pilot sample of 30 urban African-American adults with type 2 diabetes with Below Average literacy (n=15) and Average literacy (n=15).

**MEASUREMENTS:** Wide Range Achievement Test (WRAT-3, Reading), assessment of diabetes and CVD knowledge, and patient rating scale.

National assessments reveal low literacy as prevalent throughout the US, and among Black/African-American adults, fewer than 50% fall within Proficient or Intermediate literacy ranges.<sup>1,2</sup> Low literacy is considered a contributor to health disparities.<sup>3,4</sup> Yet, methods for adapting materials for low literacy are not clearly understood or widely disseminated, and there remains little empirical research testing the usability of literacy-adapted materials.<sup>5,6</sup> The purposes of this study were to develop a lower-literacy patient diabetes and cardiovascular disease (CVD) education and to pilot test its acceptability and usability in a sample of urban, African-American, type 2 diabetic adults with Below Average and Average literacy.

## METHODS

### Development of Low-Literacy Education Materials and Module

*Journal of General Internal Medicine, 2008*

# Five-step Methodology for Evaluation and Adaptation of Print Patient Health Information to Meet the <5th Grade Readability Criterion

*Felicia Hill-Briggs, PhD, ABPP,\*†‡ Kristina P. Schumann, MA,†§ and Ogechi Dike, BA ||*

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**Background:** In the setting of declining US literacy, new policies include use of clear communication and low-literacy accessibility practices with all patients. Reliable methods for adapting health information to meet such criteria remain a pressing need.

**Objectives:** To report method validation (study 1) and method replication (study 2) procedures and outcomes for a 5-step method for evaluating and adapting print health information to meet the current low-literacy criterion of <5th grade readability.

**Key Words:** literacy, diabetes, cardiovascular diseases, educational status, patient education, learning, lifestyle, self care, evaluation, readability

*(Med Care 2012;50: 294–301)*

**L**ow health literacy, a persisting public health challenge in the United States, is linked to poorer health status, in-



# Usability of a Diabetes and Cardiovascular Disease Education Module in an African American, Diabetic Sample With Physical, Visual, and Cognitive Impairment

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Johns Hopkins Bloomberg School of Public Health

Ronda Renosky  
Pennsylvania State University

Charisse Ewing  
Argosy University

**Objective:** Develop an accessible education module and test whether presence of diabetes complications and functional impairments differentially impacted intervention usability. **Method:** 30 African Americans with type 2 diabetes completed 1 of 4 (90-min) group education classes. Preintervention measures included medical history, Medical Outcomes Study Short Form–8, Telephone Interview for Cognitive Status, and Diabetes and Cardiovascular Disease Knowledge Test. For outcomes comparisons, patients were categorized according to functional impairment (physical; physical + cognitive or physical + visual; physical + cognitive + visual) and number of diabetes complications (0–1, 2–3, 4–6). Outcome measures were knowledge test change scores and patient ratings of satisfaction and accessibility of class and materials. **Results:** Education resulted in increased mean knowledge scores, from 6.6 to 11.3 ( $p < .001$ ), with significant learning found for participants in all functional impairment categories and with 0–3 complications. Patient ratings of accessibility and satisfaction were high (42–43 of 45), with minor areas identified for improvement among persons with excess complications (4–6) and impairment (physical + cognitive + visual). **Conclusion:** The diabetes education module demonstrated accessibility and effectiveness. It may be particularly useful in treating high-risk, diabetic adults with existing complications, functional impairment, or disability.

# Summary: Take Home Points

- Behavior change is difficult for everyone, but behavior change required for diabetes self-management is particularly difficult due to the complexity of the regimen (multiple behaviors), the required period of maintenance, and challenges of integration into everyday life
- Several barriers further complicate employing standard strategies for behavior change, especially for underserved populations, and require modification of educational and behavioral tools:
  - Literacy and health literacy
  - Functional impairment and disability
- Problem solving is an evidence-based behavior change strategy, that can be designed to address these multiple challenges, and it has been proven highly effective for diabetes self-management
- Use of problem solving requires training of the educator or healthcare professional, in order to utilize the method as a skill that empowers the patient in real life.
- Programs and tools are available to assist health care professionals who plan to employ problem solving for behavior change with their clients and patients.

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